IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Tadashi Senoo et al.
Appl. No.:	09/162,992
Conf. No.:	9466
Filed:	September 30, 1998
Title:	GEL ELECTRODE SECONDARY CELL
Art Unit:	1745
Examiner:	T. Dove
Docket No.:	112857-037

Commissioner for Patents
P.O. Box 1450
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APPELLANTS' REPLY BRIEF

Sir:

I. INTRODUCTION

Appellants submit Appellants' Reply Brief in response to the Examiner's answer dated March 9, 2004 pursuant to 37 C.F.R. § 1.193(b)(1). Appellants respectfully submit the Examiner's answer has failed to remedy the deficiencies with respect to the Final Office Action dated November 13, 2002 as noted in Appellants' Appeal Brief for the reasons set forth below.

Accordingly, Appellants respectfully request that the obviousness rejection with respect to claims 2-4, 6-9 and 12 be reversed.

II. AKASHI FAILS TO DISCLOSE OR SUGGEST THE CLAIMED NEGATIVE ELECTRODE

The Patent Office has primarily relied on Akashi in support of the obviousness rejection with respect to claims 2-4, 6-9 and 12. Clearly, Akashi fails to disclose a gel electrolyte secondary cell that includes, in part, a negative electrode including a current collector and a powder mixture including a graphitized carbonaceous material obtained from a plurality of meso-carbon micro-beads and a binder as required by the claimed invention and even admitted by the Patent Office. See, Examiner's Answer, pages 3 and 4.

Further, nowhere does Akashi suggest the claimed negative electrode feature contrary to the Patent Office's position. At the outset, the clear focus of Akashi relates to a fire-retardant gel

electrolyte. See, Akashi, page 3, lines 23-26. Indeed, Akashi merely provides a general disclosure with respect to a negative electrode that can be used with the gel electrolyte. For example, Akashi provides a number of examples of a suitable negative electrode activating ingredient, such as metallic lithium, a lithium alloy and a carbonaceous material wherein the carbonaceous material may include pyrolytic carbon, cokes such as pitch cokes, needle cokes and petroleum cokes, graphite, glass-like carbon, a burned product of an organic polymeric compound, carbon fibers, and active carbon. See, Akashi, page 5, lines 12-16. Moreover, the specific examples in Akashi merely provide the use of a pair of disk-like platinum electrodes (see, Akashi, page 5, lines 46-50) or the use of a metallic lithium plate (see, Akashi, page 10, lines 39 and 40) for the negative electrode.

In contrast, the claimed negative electrode includes a graphitized carbonaceous material obtained from meso-carbon micro-beads as previously discussed. In general, the meso-carbon micro-beads are micro-globules of liquid crystal produced as an intermediate associated with a phase transition from a liquid phase to a solid phase as a result of heat-treating an organic compound where the meso-carbon micro-beads are fired or subsequently heated at an elevated temperature (i.e., about 2500°C to about 3500°C) to provide the graphitized carbonaceous material of the claimed negative electrode as further supported in the specification on pages 8 and 9. Moreover, Applicants have conducted comparative studies that demonstrate the desirable properties of a gel electrolyte secondary cell that at least includes the claimed negative electrode as compared to negative electrodes made from a different type of carbonaceous material. See, Specification, pages 15-24. In view of same, Appellants do not believe that the Akashi disclosure on its own provides sufficient detail such that one skilled in the art would be inclined to practice the claimed invention. Therefore, Akashi is distinguishable with respect to the claimed invention as, at a minimum, Akashi fails to disclose or suggest the claimed negative electrode feature and thus cannot be relied on its own to render obvious the claimed invention.

III. OZAKI TEACHES AWAY FROM THE CLAIMED INVENTION

Contrary to the Patent Office's position, Appellants do not believe that the Patent Office can rely solely on Ozaki to remedy the deficiencies of the primary Akashi reference. Clearly, the Ozaki reference teaches away from a gel electrolyte secondary cell that includes a negative electrode and an electrolyte that includes propylene carbonate. Indeed, Ozaki specifically

discloses that "as for the organic solvent of the organic electrolyte for the non-aqueous electrolyte, propylene carbonate (PC) is not employed ..." See, Ozaki, column 7, lines 5-8. In contrast, the claimed invention requires that the negative electrode obtained from meso-carbon micro-beads is used in combination with a gel electrolyte that includes, in part, a non-aqueous solvent at least including propylene carbonate in an amount ranging from 10 mol% to 75 mol%. Why then would one skilled in the art be motivated to combine the negative electrode material in Ozaki with a gel electrolyte that includes propylene carbonate? At best, the combination of Akashi and Ozaki provides a gel electrolyte secondary cell with a negative electrode as disclosed in Ozaki and with a gel electrolyte that does not include propylene carbonate.

Contrary to the Patent Office's position (see, Examiner's Answer, page 7), a reconstruction based upon hindsight reasoning to support an obviousness rejection is not proper. Again, Ozaki teaches away from the claimed invention as discussed above. Moreover, the Akashi reference, at a minimum, merely provides a general disclosure regarding the use of negative electrode materials and thus fails to disclose or suggest the specific claimed negative electrode feature as further discussed above. Again, Appellants have recognized and demonstrated that negative electrodes obtained from meso-carbon micro-beads can enhance the characteristics with respect to gel electrolyte secondary cells as compared to gel electrolyte secondary cells that include different types of carbonaceous materials as discussed above. Therefore, Appellants do not believe that one skilled in the art would be inclined to modify Akashi in view of Ozaki to provide the claimed gel electrolyte secondary cell.

Accordingly, Appellants respectfully submit that the obviousness rejection of claims 2-4, 6-9 and 12 is at odds with the law and facts.

IV. CONCLUSION

For the foregoing reasons, Appellants respectfully submit that the Examiner's answer does not remedy the deficiencies noted in Appellants' Appeal Brief with respect to the final Office Action. Therefore, Appellants once again request that the Board of Appeals reverse the obviousness rejection of claims 2-4, 6-9 and 12.

Respectfully submitted,

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